

Human Health Risk Assessment on Water from the ITS Sump (SW095)

A human health risk assessment (HHRA) was performed on the water from the interceptor trench system (ITS) located in Operable Unit No. 4 (OU4). Data were extracted from RFEDS for the ITS sump, location SW095 and cleaned up using standard procedures. The purpose of this HHRA is to estimate current risks and hazards due to human consumption of the sump water. Therefore, in order to reflect the actual current risk associated with the sump water, only recent data collected before January 1, 1992 were used for the risk assessment.

The data were separated into RCRA and non-RCRA constituents. Inorganics were compared to background data for UHSU groundwater. Any inorganic with a detect greater than the background mean plus two standard deviations was carried through the risk assessment, all other analytes were dropped from consideration (Tables 13 and 15). All detected organics were assessed in the risk assessment (Table 11 and 14). RCRA organics detected are shown in Table 11. No non-RCRA organics have been detected in the sump water.

The concentration term used in the HHRA was calculated using both the detect and nondetect data. Nondetects were used at one-half the detection limit, unless there was a detection with a higher value, in which case the detection limit was used in the calculation (Tables 9 and 10). The mean, standard deviation, and 95% upper confidence limit of the mean (UCL) for each constituent was calculated. The 95% UCL was then used for the exposure concentration. The maximum detected concentration was used if it was lower than the 95% UCL.

Two exposure scenarios were used in calculations for the risk estimates. Residential ingestion of groundwater over a 30-year period and an open space recreational user incidentally ingesting the water over 30 years. Exposure factors used in the calculations are shown in the risk tables (Tables 5 through 8).

The estimated incremental risk from residential ingestion of RCRA constituents (see Tables 1 and 5) contained in the ITS sump water is 1×10^{-7} for the average exposure (CT) and 3×10^{-6} for the reasonable maximum exposure (RME). The noncarcinogenic hazard quotient (HQ) is 0.01 for the CT and 0.07 for the RME (see Tables 1 and 5), both well below one (1.0), indicating noncarcinogenic health effects are not expected. The carcinogenic risk is driven by carbon tetrachloride.

The estimated incremental risk for the open space recreational user for ingestion of RCRA constituents (see Table 2 and 6) contained in the ITS sump water is 4×10^{-11} for the CT and 3×10^{-9} for the RME. The noncarcinogenic HQ is 0.000004 for the CT and 0.0001 for the RME, both well below one (1.0), indicating noncarcinogenic health effects are not expected (see Table 2 and 6). Carcinogenic risk is considered insignificant for the open space user.

The estimated incremental risk from residential ingestion of non-RCRA constituents (see Tables 3 and 7) contained in the ITS sump water could not be calculated because no accepted carcinogenic toxicity values have been assigned to these constituents by the USEPA. The noncarcinogenic HQ is 0.9 for the CT and 6.3 for the RME, indicating noncarcinogenic health effects could occur to sensitive subpopulations (see Tables 3 and 7). The HQ was driven by nitrate.

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The estimated incremental risk for the open space recreational user for ingestion of non-RCRA constituents (see Tables 4 and 8) contained in the ITS sump water could not be calculated because no accepted carcinogenic toxicity values have been assigned to these constituents by the USEPA. The noncarcinogenic HQ is 0.0006 for the CT and 0.007 for the RME, indicating noncarcinogenic health effects would not be expected, even to sensitive subpopulations, for open space receptors (see Tables 4 and 8).

In summary, four RCRA organics have been detected in the ITS sump water in since January 1, 1992. The levels detected are very low, well below the maximum contaminant levels (MCL) for drinking water. Mercury was the only RCRA inorganic detected. It was detected once at a concentration slightly above the detection limit. The combined RME risk to a resident drinking the sump water for 30 years would be 3×10^{-6} .

Table 1 - Human Health Risk Assessment Summary for a Hypothetical Resident Ingesting RCRA Constituents in ITS Groundwater

Media/Pathway	Average Exposure (CT)		Reasonable Maximum Exposure (RME)	
	Cancer Risk	Chronic Hazard Index	Cancer Risk	Chronic Hazard Index
<u>Groundwater Ingestion</u>	1.26E-07	0.01	2.99E-06	0.07
Total	1E-07	0.01	3E-06	0.07

Table 2 - Human Health Risk Assessment Summary for a Future Open Space User Ingesting RCRA Constituents in ITS Sump Water

Media/Pathway	Average Exposure (CT)		Reasonable Maximum Exposure (RME)	
	Cancer Risk	Chronic Hazard Index	Cancer Risk	Chronic Hazard Index
<u>Sump Water Ingestion</u>	4.86E-11	0.000004	1.94E-09	0.0001
Total	4E-11	0.000004	2E-09	0.0001

Table 3 - Human Health Risk Assessment Summary for a Hypothetical Resident Ingesting Non-RCRA Constituents in ITS Groundwater

Media/Pathway	Average Exposure (CT)		Reasonable Maximum Exposure (RME)	
	Cancer Risk	Chronic Hazard Index	Cancer Risk	Chronic Hazard Index
<u>Groundwater</u> Ingestion	-	0.9	-	6.3
Total	-	0.9	-	6.3

Table 4 - Human Health Risk Assessment Summary for a Future Open Space User Ingesting Non-RCRA Constituents in ITS Sump Water

Media/Pathway	Average Exposure (CT)		Reasonable Maximum Exposure (RME)	
	Cancer Risk	Chronic Hazard Index	Cancer Risk	Chronic Hazard Index
<u>Sump Water</u> Ingestion	-	0.0006	-	0.007
Total	-	0.0006	-	0.007

**Table 5 (Con't) - Estimated Risk to Hypothetical Resident from Ingestion
of RCRA Constituents in Groundwater from the ITS**

NONCARCINOGENIC EFFECTS

(HQ = CxIF/RfD)

CENTRAL TENDENCY:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg-day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
CARBON TETRACHLORIDE	0.00119	3.85E-03	4.57E-06	7.00E-04	0.01
METHYLENE CHLORIDE	0.00752	3.85E-03	2.89E-05	6.00E-02	0.0005
TOLUENE	0.00049	3.85E-03	1.88E-06	2.00E-01	0.000009
TRICHLOROETHENE	0.004	3.85E-03	1.54E-05	-	-
MERCURY	0.000216	3.85E-03	8.31E-07	3.00E-04	0.0028
HAZARD INDEX					0.01

REASONABLE MAXIMUM EXPOSURE:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg-day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
CARBON TETRACHLORIDE	0.00119	2.74E-02	3.25E-05	7.00E-04	0.05
METHYLENE CHLORIDE	0.00752	2.74E-02	2.06E-04	6.00E-02	0.003
TOLUENE	0.00049	2.74E-02	1.34E-05	2.00E-01	0.0001
TRICHLOROETHENE	0.004	2.74E-02	1.10E-04	-	-
MERCURY	0.000216	2.74E-02	5.92E-06	3.00E-04	0.020
HAZARD INDEX					0.07

- There is no slope factor and/or RfD recognized by USEPA for these chemicals.

**Table 6 - Estimated Risk for Future Open-space Recreational User from
Ingestion of RCRA Constituents in Water From ITS Sump**

Chemical Intake Factor = (IRxEDxEFxET)/(ATxBW)

Exposure Factors Description	Chemical Units	Central Tendency	Reasonable Maximum Exposure
		Adult Exposure	Adult Exposure
Ingestion Rate (IR)	mL/hr	25	50
Conversion Factor (CF)	L/mL	0.001	0.001
Exposure Time (ET)	hr/visit	0.5	1
Exposure Frequency (EF)	visits/year	5	15
Exposure Duration (ED)	years	9	30
Body Weight (BW)	kg	70	70
Carcinogenic Averaging Time (AT)	days	25550	25550
Noncarcinogenic Averaging Time (AT)	days	3285	10950

CARCINOGENIC RISK

(CR = CxIFxSF)

CENTRAL TENDENCY:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Slope Factor (SF) [1/(mg/kg day)]	Carcinogenic Risk (CR)
CARBON TETRACHLORIDE	0.00119	3.15E-07	3.74E-10	1.30E-01	4.86E-11
METHYLENE CHLORIDE	0.00752	3.15E-07	2.37E-09	7.50E-03	1.77E-11
TOLUENE	0.00049	3.15E-07	1.54E-10	-	-
TRICHLOROETHENE	0.004	3.15E-07	1.26E-09	1.10E-02	1.38E-11
MERCURY	0.000216	3.15E-07	6.79E-11	-	-
TOTAL					4.86E-11

REASONABLE MAXIMUM EXPOSURE:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Slope Factor (SF) [1/(mg/kg day)]	Carcinogenic Risk (CR)
CARBON TETRACHLORIDE	0.00119	1.26E-05	1.49E-08	1.30E-01	1.94E-09
METHYLENE CHLORIDE	0.00752	1.26E-05	9.46E-08	7.50E-03	7.10E-10
TOLUENE	0.00049	1.26E-05	6.16E-09	-	-
TRICHLOROETHENE	0.004	1.26E-05	5.03E-08	1.10E-02	5.54E-10
MERCURY	0.000216	1.26E-05	2.72E-09	-	-
TOTAL					1.94E-09

- There is no slope factor and/or RfD recognized by USEPA for these chemicals.

6

**Table 6 (Con't) - Estimated Risk for Future Open-space Recreational User from
Ingestion of RCRA Constituents in Water From ITS Sump**

NONCARCINOGENIC EFFECTS

(HQ = CxIF/RfD)

CENTRAL TENDENCY:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
CARBON TETRACHLORIDE	0.00119	2.45E-06	2.91E-09	7.00E-04	0.000004
METHYLENE CHLORIDE	0.00752	2.45E-06	1.84E-08	6.00E-02	0.0000003
TOLUENE	0.00049	2.45E-06	1.20E-09	2.00E-01	0.000000006
TRICHLOROETHENE	0.004	2.45E-06	9.78E-09	-	-
MERCURY	0.000216	2.45E-06	5.28E-10	3.00E-04	0.000002
HAZARD INDEX					0.000004

REASONABLE MAXIMUM EXPOSURE:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
CARBON TETRACHLORIDE	0.00119	2.94E-05	3.49E-08	7.00E-04	0.00005
METHYLENE CHLORIDE	0.00752	2.94E-05	2.21E-07	6.00E-02	0.000004
TOLUENE	0.00049	2.94E-05	1.44E-08	2.00E-01	0.00000007
TRICHLOROETHENE	0.004	2.94E-05	1.17E-07	-	-
MERCURY	0.000216	2.94E-05	6.34E-09	3.00E-04	0.00002
HAZARD INDEX					0.0001

- There is no slope factor and/or RfD recognized by USEPA for these chemicals.

7

**Table 7 - Estimated Risk to Hypothetical Resident from Ingestion
of Non-RCRA Constituents in Groundwater from the ITS**

Chemical Intake Factor = (IRxEDxEFxFC)/(BWxAT)

Exposure Factors Description	Chemical Units	Exposure Value	
		Central Tendency	Reasonable Maximum Exposure
Ingestion Rate (IR)	L/day	1.4	2
Fraction from Contaminated Source (FC)	unitless	0.3	1.0
Exposure Frequency (EF)	days/year	234	350
Exposure Duration (ED)	years	9	30
Body Weight (BW)	kg	70	70
Carcinogenic Averaging Time (AT)	days	25550	25550
Noncarcinogenic Averaging Time (AT)	days	3285	10950

CARCINOGENIC RISK

(CR = CxIFxSF)

CENTRAL TENDENCY:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg-day)	Intake (mg/kg-day)	Slope Factor (SF) [1/(mg/kg-day)]	Carcinogenic Risk (CR)
NITRATE	337	4.95E-04	1.66E-01	-	-
LITHIUM	0.31	4.95E-04	1.55E-04	-	-
STRONTIUM	2.3	4.95E-04	1.14E-03	-	-
TOTAL					-

REASONABLE MAXIMUM EXPOSURE:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg-day)	Intake (mg/kg-day)	Slope Factor (SF) [1/(mg/kg-day)]	Carcinogenic Risk (CR)
NITRATE	337	1.17E-02	3.95E+00	-	-
LITHIUM	0.31	1.17E-02	3.69E-03	-	-
STRONTIUM	2.3	1.17E-02	2.70E-02	-	-
TOTAL					-

- There is no slope factor recognized by USEPA for these chemicals.

8

**Table 7 (Con't) - Estimated Risk to Hypothetical Resident from Ingestion
of Non-RCRA Constituents in Groundwater from the ITS**

NONCARCINOGENIC EFFECTS

(HQ = CxIF/RfD)

CENTRAL TENDENCY:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg-day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
NITRATE	337	3.85E-03	1.29E+00	1.60E+00	0.8
LITHIUM	0.31	3.85E-03	1.21E-03	2.00E-02	0.06
STRONTIUM	2.3	3.85E-03	8.85E-03	6.00E-01	0.01
HAZARD INDEX					0.9

REASONABLE MAXIMUM EXPOSURE:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg-day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
NITRATE	337	2.74E-02	9.22E+00	1.60E+00	5.8
LITHIUM	0.31	2.74E-02	8.60E-03	2.00E-02	0.4
STRONTIUM	2.3	2.74E-02	6.30E-02	6.00E-01	0.1
HAZARD INDEX					6.3

**Table 8 - Estimated Risk for Future Open-space Recreational User from
Ingestion of Non-RCRA Constituents in Water From ITS Sump**

Chemical Intake Factor = (IRxEDxEFxET)/(ATxBW)

Exposure Factors Description	Chemical Units	Central Tendency	Reasonable Maximum Exposure
		Adult Exposure	Adult Exposure
Ingestion Rate (IR)	mL/hr	25	50
Conversion Factor (CF)	L/mL	0.001	0.001
Exposure Time (ET)	hr/visit	0.5	1
Exposure Frequency (EF)	visits/year	5	15
Exposure Duration (ED)	years	9	30
Body Weight (BW)	kg	70	70
Carcinogenic Averaging Time (AT)	days	25550	25550
Noncarcinogenic Averaging Time (AT)	days	3285	10950

CARCINOGENIC RISK

(CR = CxIFxSF)

CENTRAL TENDENCY:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Slope Factor (SF) [1/(mg/kg day)]	Carcinogenic Risk (CR)
NITRATE	337	3.15E-07	1.06E-04	-	-
LITHIUM	0.31	3.15E-07	9.88E-08	-	-
STRONTIUM	2.3	3.15E-07	7.23E-07	-	-
				TOTAL	-

REASONABLE MAXIMUM EXPOSURE:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Slope Factor (SF) [1/(mg/kg day)]	Carcinogenic Risk (CR)
NITRATE	337	1.26E-05	4.23E-03	-	-
LITHIUM	0.31	1.26E-05	3.95E-06	-	-
STRONTIUM	2.3	1.26E-05	2.89E-05	-	-
				TOTAL	-

- There is no slope factor recognized by USEPA for these chemicals.

16

**Table 8 (Con't) Estimated Risk for Future Open-space Recreational User from
Ingestion of Non-RCRA Constituents in Water From ITS Sump**

NONCARCINOGENIC EFFECTS

(HQ = CxIF/RfD)

CENTRAL TENDENCY:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
NITRATE	337	2.45E-06	8.23E-04	1.60E+00	0.0005
LITHIUM	0.31	2.45E-06	7.68E-07	2.00E-02	0.00004
STRONTIUM	2.3	2.45E-06	5.63E-06	6.00E-01	0.000009
HAZARD INDEX					0.0006

REASONABLE MAXIMUM EXPOSURE:

Chemical	Water Concentration (C) (mg/L)	Intake Factor (IF) (kg/kg- day)	Intake (mg/kg- day)	Oral Reference Dose (RfD) (mg/kg-day)	Hazard Quotient (HQ)
NITRATE	337	2.94E-05	9.88E-03	1.60E+00	0.006
LITHIUM	0.31	2.94E-05	9.22E-06	2.00E-02	0.0005
STRONTIUM	2.3	2.94E-05	6.75E-05	6.00E-01	0.0001
HAZARD INDEX					0.007

**Table 9 - Calculation of the Exposure Concentration
For RCRA Constituents¹**

Chemical	Concentrations (ug/L)*								Maximum	Mean	St. Dev.	95% UCL
CARBON TETRACHLORIDE	1	1	1.1	1.2					1.2	1.1	0.1	1.19
METHYLENE CHLORIDE	3	5	5	7.8					7.8	5.2	2.0	7.52
TOLUENE	0.2	0.49	2.5	2.5					0.49	1.4	1.2	2.89
TRICHLOROETHENE	3.3	3.6	4	4					4	3.7	0.3	4.13
MERCURY	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.216	0.216	0.202	0.006	0.206

¹ See Table 11 for listing of analytical results.

* Nondetects are used at one-half the detection limit, unless there is a detection at a higher value.

**Table 10 - Calculation of the Exposure
Concentrations For Non-RCRA
Constituents**

Chemical			
	Nitrate	Lithium	Strontium
	Concentrations (ug/L)*		
	8570	179	1250
	47600	251	1840
	57000	256	1840
	194000	260	1966
	285000	260	2180
	304000	316	2250
	320000	318	2360
	337000	368	2508
	344000		
	370000		
	372000		
	380000		
	440000		
Maximum	440000	368	2508
Mean	266090	276	2024
St. Dev.	142596	57	395
95% UCL	336566	314	2289

¹ See Table 12 for listing of analytical results.

Common nutrients were not included in the risk analysis

* Nondetects are used at one-half the detection limit,
unless there is a detection at a higher value.

Table 11 - RCRA Constituents Detected in Groundwater at the ITS Sump

LOCATION	SDATE	ANALYTE	RESULT	UNITS	QUAL	DETECT LIMIT	VAL	% Det	BKG* MEAN	MEAN+ 2(STD)	BKG STD	BKG STDx2
SW095	2/25/92	CARBON TETRACHLORIDE	1	UG/L	J	5	A	100				
SW095	5/16/95	CARBON TETRACHLORIDE	1	UG/L	J	5	Y					
SW095	12/9/92	CARBON TETRACHLORIDE	1.1	UG/L		0.02	V					
SW095	9/25/92	CARBON TETRACHLORIDE	1.2	UG/L		0.02	JA					
SW095	12/9/92	METHYLENE CHLORIDE	3	UG/L		0.01	JA	50				
SW095	2/25/92	METHYLENE CHLORIDE	5	UG/L	U	5	V					
SW095	5/16/95	METHYLENE CHLORIDE	5	UG/L	U	5	Y					
SW095	9/25/92	METHYLENE CHLORIDE	7.8	UG/L		0.01	JA					
SW095	12/9/92	TOLUENE	0.2	UG/L	U	0.02	JA	25				
SW095	9/25/92	TOLUENE	0.49	UG/L		0.02	V					
SW095	2/25/92	TOLUENE	5	UG/L	U	5	V					
SW095	5/16/95	TOLUENE	5	UG/L	U	5	Y					
SW095	12/9/92	TRICHLOROETHENE	3.3	UG/L		0.03	V	100				
SW095	9/25/92	TRICHLOROETHENE	3.6	UG/L		0.03	V					
SW095	2/25/92	TRICHLOROETHENE	4	UG/L	J	5	A					
SW095	5/16/95	TRICHLOROETHENE	4	UG/L	J	5	Y					
SW095	12/9/92	MERCURY	0.2	UG/L	U	0.2	V	12.5				
SW095	11/8/93	MERCURY	0.2	UG/L	U	0.2	Z					
SW095	2/15/94	MERCURY	0.2	UG/L	U	0.2	Z					
SW095	5/9/94	MERCURY	0.2	UG/L	U	0.2	Z					
SW095	8/16/94	MERCURY	0.2	UG/L	U	0.2	V					
SW095	11/7/94	MERCURY	0.2	UG/L	U	0.2	Z					
SW095	5/4/95	MERCURY	0.2	UG/L	U	0.2	Y					
SW095	2/7/95	MERCURY	0.216	UG/L		0.2	Z					
									0.1	0.14	0.02	0.04

* UHSU groundwater background values. Analytical values greater than background mean plus two standard deviations are considered above background.

Table 12- RCRA Organic Constituents Not Detected at the ITS Sump

LOCATION	SDATE	ANALYTE	RESULT	UNITS	QUAL	DETECT LIMIT	VAL	% Det
SW095	9/25/92	1,1,1-TRICHLOROETHANE	0.1	UG/L	U	0.01	JA	0
SW095	12/9/92	1,1,1-TRICHLOROETHANE	0.1	UG/L	U	0.01	V	
SW095	2/25/92	1,1,1-TRICHLOROETHANE	5	UG/L	U	5	V	
SW095	5/16/95	1,1,1-TRICHLOROETHANE	5	UG/L	U	5	Y	
SW095	5/16/95	2-BUTANONE (MEK)	10	UG/L	U	10	Y	0
SW095	12/9/92	BENZENE	0.2	UG/L	U	0.01	JA	0
SW095	2/25/92	BENZENE	5	UG/L	U	5	V	
SW095	5/16/95	BENZENE	5	UG/L	U	5	Y	
SW095	9/25/92	TETRACHLOROETHENE	0.1	UG/L	U	0.02	V	0
SW095	12/9/92	TETRACHLOROETHENE	0.1	UG/L	U	0.02	V	
SW095	2/25/92	TETRACHLOROETHENE	5	UG/L	U	5	V	
SW095	5/16/95	TETRACHLOROETHENE	5	UG/L	U	5	Y	

Table 13 - RCRA Inorganic Constituents Not Detected in the ITS Sump Water at Concentrations Greater Than Background Plus Two Standard Deviations

LOCATION	SDATE	ANALYTE	RESULT	UNITS	QUAL	DETECT LIMIT	VAL	%Det	BKG* MEAN	MEAN+ 2(STD)	BKG STD	BKG STDx2
SW095	12/9/92	ARSENIC	1	UG/L	U	10	V	0	4.43	7.15	1.36	2.72
SW095	11/7/94	ARSENIC	1	UG/L	U	1	Z					
SW095	5/9/94	ARSENIC	1.3	UG/L	U	1.3	Z					
SW095	2/7/95	ARSENIC	1.4	UG/L	U	1.4	Z					
SW095	11/8/93	ARSENIC	1.5	UG/L	U	1.5	Z					
SW095	2/15/94	ARSENIC	1.6	UG/L	U	1.6	Z					
SW095	8/16/94	ARSENIC	2	UG/L	U	10	V					
SW095	5/4/95	ARSENIC	2.7	UG/L	U	2.7	Y					
SW095	11/8/93	BARIUM	125	UG/L		1.6	Z	100	106.47	244.97	69.25	138.5
SW095	5/9/94	BARIUM	136	UG/L		1.5	Z					
SW095	2/7/95	BARIUM	138.75	UG/L	B	0.4	Z					
SW095	5/4/95	BARIUM	138.99	UG/L	B	0.6	Y					
SW095	2/15/94	BARIUM	141	UG/L		1.6	Z					
SW095	8/16/94	BARIUM	146	UG/L	B	200	V					
SW095	11/7/94	BARIUM	163.31	UG/L	B	1	Z					
SW095	12/9/92	BARIUM	170	UG/L	B	200	V					
SW095	2/7/95	BERYLLIUM	0.2	UG/L	U	0.2	Z	12.5	2.34	3.46	0.56	1.12
SW095	5/4/95	BERYLLIUM	0.2	UG/L	U	0.2	Y					
SW095	11/8/93	BERYLLIUM	0.3	UG/L	U	0.3	Z					
SW095	5/9/94	BERYLLIUM	0.6	UG/L	U	0.6	Z					
SW095	12/9/92	BERYLLIUM	1	UG/L	U	5	V					
SW095	8/16/94	BERYLLIUM	1	UG/L	U	5	V					
SW095	11/7/94	BERYLLIUM	1	UG/L	U	1	Z					
SW095	2/15/94	BERYLLIUM	1.2	UG/L		0.8	Z					
SW095	2/7/95	CADMIUM	1.6	UG/L	U	1.6	Z	0	2.53	3.89	0.68	1.36
SW095	11/7/94	CADMIUM	2	UG/L	U	2	Z					
SW095	5/4/95	CADMIUM	2	UG/L	U	2	Y					
SW095	5/9/94	CADMIUM	2.3	UG/L	U	2.3	Z					
SW095	12/9/92	CADMIUM	3	UG/L	U	5	V					
SW095	8/16/94	CADMIUM	3	UG/L	U	5	V					
SW095	11/8/93	CADMIUM	3.1	UG/L	U	3.1	Z					
SW095	2/15/94	CADMIUM	3.1	UG/L	U	3.1	Z					
SW095	12/9/92	CHROMIUM	2	UG/L	U	10	V	37.5	13.21	134.47	60.63	121.26
SW095	8/16/94	CHROMIUM	2	UG/L	U	10	V					
SW095	11/7/94	CHROMIUM	2	UG/L	U	2	Z					
SW095	2/7/95	CHROMIUM	2.06	UG/L	B	1.8	Z					
SW095	5/4/95	CHROMIUM	2.11	UG/L	B	2	Y					
SW095	5/9/94	CHROMIUM	2.2	UG/L	U	2.2	Z					
SW095	11/8/93	CHROMIUM	3.5	UG/L		2	Z					
SW095	2/15/94	CHROMIUM	4.4	UG/L	U	4.4	Z					

* UHSU groundwater background values.

Table 14 - Non-RCRA Constituents Detected In the ITS Sump Water at Concentrations Greater Than Background Plus Two Standard Deviations

LOCATION	SDATE	ANALYTE	RESULT	UNITS	QUAL	DETECT LIMIT	VAL	%DET	BKG* MEAN	MEAN+ 2(STD)	BKG STD	BKG STDx2
SW095	5/4/95	CALCIUM	163305	UG/L		19.7	Y	100				
SW095	5/9/94	CALCIUM	219000	UG/L		8.8	Z					
SW095	11/8/93	CALCIUM	226000	UG/L		13.2	Z					
SW095	11/7/94	CALCIUM	251065	UG/L		7	Z					
SW095	2/15/94	CALCIUM	263000	UG/L		21.1	Z					
SW095	12/9/92	CALCIUM	285000	UG/L		5000	V					
SW095	8/16/94	CALCIUM	285000	UG/L		5000	V					
SW095	2/7/95	CALCIUM	301328	UG/L		3.4	Z		55030	118366	31668	63336
SW095	5/4/95	LITHIUM	179.1	UG/L		1	Y	100				
SW095	11/7/94	LITHIUM	250.6	UG/L		2	Z					
SW095	2/15/94	LITHIUM	256.0	UG/L		1.9	Z					
SW095	11/8/93	LITHIUM	260.0	UG/L		2.2	Z					
SW095	5/9/94	LITHIUM	260.0	UG/L		1.4	Z					
SW095	8/16/94	LITHIUM	316.0	UG/L		100	V					
SW095	2/7/95	LITHIUM	318.2	UG/L		1	Z					
SW095	12/9/92	LITHIUM	368.0	UG/L		100	V		33.6	130.6	48.5	97.0
SW095	5/4/95	MAGNESIUM	43526	UG/L		19.9	Y	100				
SW095	11/8/93	MAGNESIUM	60400	UG/L		20.7	Z					
SW095	5/9/94	MAGNESIUM	61300	UG/L		13.3	Z					
SW095	11/7/94	MAGNESIUM	63780	UG/L		12	Z					
SW095	2/15/94	MAGNESIUM	68700	UG/L		38.8	Z					
SW095	12/9/92	MAGNESIUM	75900	UG/L		5000	V					
SW095	8/16/94	MAGNESIUM	76500	UG/L		5000	V					
SW095	2/7/95	MAGNESIUM	82566	UG/L		13.3	Z		10331	26217	7943	15886
SW095	34073	NITRATE	8570	UG/L			Z	100				
SW095	33872	NITRATE	47600	UG/L		10000	V					
SW095	34859	NITRATE	57000	UG/L		50	Z					
SW095	34823	NITRATE	194000	UG/L		200	Y					
SW095	34835	NITRATE	285000	UG/L		50	Y					
SW095	34463	NITRATE	304000	UG/L		25000	V					
SW095	34645	NITRATE	320000	UG/L		20	Z					
SW095	34380	NITRATE	337000	UG/L		50000	V					
SW095	34737	NITRATE	344000	UG/L		200	Z					
SW095	34562	NITRATE	370000	UG/L		20	V					
SW095	34281	NITRATE	372000	UG/L		50000	V					
SW095	33947	NITRATE	380000	UG/L		20						
SW095	33659	NITRATE	440000	UG/L		20	V		2094.79	37713.23	17809	35618.4
SW095	2/15/94	POTASSIUM	33500	UG/L		653	Z	100				
SW095	5/4/95	POTASSIUM	36083	UG/L		424	Y					
SW095	11/7/94	POTASSIUM	36858	UG/L		381	Z					
SW095	2/7/95	POTASSIUM	39422	UG/L		360	Z					
SW095	5/9/94	POTASSIUM	41700	UG/L		408	Z					
SW095	11/8/93	POTASSIUM	42600	UG/L		887	Z					
SW095	8/16/94	POTASSIUM	56500	UG/L		5000	V					
SW095	12/9/92	POTASSIUM	66300	UG/L		5000	V		1766	4110	1172	2344
SW095	5/4/95	SODIUM	241663	UG/L		12.2	Y	100				
SW095	5/9/94	SODIUM	316000	UG/L		12.3	Z					
SW095	2/15/94	SODIUM	322000	UG/L		22.4	Z					
SW095	11/8/93	SODIUM	334000	UG/L		25.9	Z					
SW095	11/7/94	SODIUM	336238	UG/L		10	Z					
SW095	8/16/94	SODIUM	377000	UG/L		5000	V					
SW095	2/7/95	SODIUM	391260	UG/L		17.9	Z					
SW095	12/9/92	SODIUM	428000	UG/L		5000	V		30082	110121	40020	80039
SW095	5/4/95	STRONTIUM	1250	UG/L		0.3	Y	100				
SW095	11/8/93	STRONTIUM	1840	UG/L		2.3	Z					
SW095	5/9/94	STRONTIUM	1840	UG/L		3.7	Z					
SW095	11/7/94	STRONTIUM	1966	UG/L		1	Z					
SW095	2/15/94	STRONTIUM	2180	UG/L		5.6	Z					
SW095	12/9/92	STRONTIUM	2250	UG/L		200	JA					
SW095	8/16/94	STRONTIUM	2360	UG/L		200	V					
SW095	2/7/95	STRONTIUM	2508	UG/L		0.2	Z		313	855	271	542

* UHSU groundwater background values.